USAID's Water and Energy Nexus Project, Phase II
Quarterly Report, September 2005

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1. BACKGROUND

The Water and Energy Nexus Project (WENEXA) Project falls under the Indo-US Bilateral Agreement entitled Energy Conservation and Commercialization between the Governments of India and the United States. The Ministry of Power is the authorized nodal agency representing the Government of India within the context of this agreement. The agreement finances various energy conservation initiatives and also includes the USAID Distribution Reform Upgrade Management (DRUM) program that comprises: 1) DRUM technical assistance and demonstration projects; 2) Training Initiative; 3) Rural electrification technical assistance through an agreement with the US Department of Agriculture's Rural Utility Service (RUS); and, 4) Water and Energy Nexus Activity. The two Governments have organized a DRUM Project Advisory Committee (PAC) to ensure joint coordination of this initiative.

The activities under this project support USAID's Strategic Objective (SO) 16. Improved Access to Clean Energy and Water in Selected States. Performance indicators associated with this SO include:

1. Number of men and women that have access to improved power supply.[1]
2. Number of men and women with access to sustainable water supply.
3. Number of tons of CO2 avoided.[2]

WENEXA II responds to IR. 16.2

IR 16.2: Improved groundwater management in selected states:

Adoption of energy efficient pumps.[3]

Number of hectares of cropland under improved irrigation techniques.[4]

The WENEXA Project includes the following components and tasks.

Component A: Policy Dialogue

Task 1.	Support Development of Energy and Water Co-Management Framework
Task 2.	Provision of Central and State Level Programmatic and Institutional Support
Task 3	Support Institutional Arrangements and Capacity Building for Sustainable Water Resources Management in Target Areas

[1] Improved power supply is defined by the number of new connections and the increase in hours of electricity supply per day within a defined geographic area.

[2] Standard equations will be used to estimate the amount of CO2 avoided through adoption of energy efficient technologies and practices.

[3] Use of energy efficient pumps is a key measure for the adoption of technology for improved water-energy management.

[4] Adoption of improved irrigation techniques (such as drip or sprinkle) is a key measure for water end-use efficiency.

Component B: Sector Reforms—Site Based Activities

Task 4.	Provide Site Based Activities to Enhance Commercial Power Distribution and Sustainable Water Management in Agriculture
Task 5.	Support Basin Level Hydrological Information Collection and Analysis in Target Areas
Task 6.	Provide Site Based Support To Improve Urban Energy/Water Accessibility, delivery, efficient use, and waste management
Task 7.	Support to Improve Water Service Delivery, Reliability and Pollution Reduction in the Industrial Sector

Component C: Customer Service and User Group Participation

Task 8.	Develop and Implement a Communication Strategy with the Engagement of Civil Society/Industrial groups to extend and promote water energy concepts and technologies
Task 9.	Design of Participatory Models to Improve Local Ownership and Management of Rural Power Distribution
Task 10.	Promote Sustainable Water Resources Management Through Grass Roots Institutions

2. TASK-SPECIFIC ACTIVITY HIGHLIGHTS

2.1 Task 1. Support Development of Energy and Water Co-Management Framework

2.1.1 PAC Meeting July 1 2005

The DRUM Project Advisory Committee met on July 1 2005. During the meeting the WENEXA Project provided an overview of its approach to Project implementation at the Doddaballapur Agricultural Site. The Committee seemed pleased with the Project progress and the approach and direction it was taking towards addressing pumpset efficiency and groundwater irrigation management. The Chair of the Committee indicated that, although the energy sector implementation was fairly straightforward, WENEXA implementation would involve a variety of stakeholders. He requested that a meeting with relevant stakeholders be held to discuss possible implementation models and which organization would accept national level ownership of the WENEXA program.

2.1.2 National stakeholder brainstorming meeting July 27, 2005

On July 27, 2005, the Ministry of Power hosted a brainstorming meeting to discuss WENEXA implementation with relevant government stakeholders. Key participants included NABARD, the Central Planning Commission, Power Finance Corporation, and the Ministry of Power. The consensus was that there were four relevant implementation models that could be used for a WENEXA Program. These included 1) utility, 2) state program departments such as Watershed Departments, 3) Agricultural Departments, 4) Groundwater Boards, 5) Rural Development Departments and 5) Panchayat Raj Institutions.

2.2 Task 2. Provision of Central and State Level Programmatic and Institutional Support

2.2.1 Technical Coordination Working Group Meeting July 5, 2005

On July 5, 2005 the first AP WENEXA Technical Coordination Group was held. It was widely attended by a range of officials from the power sector, rural development agriculture, water resources, groundwater, and the irrigation. The objective of outlining recommendations for improvements in the groundwater management framework was determined to be the overarching assignment for the group. The group is assigned to meet monthly to undertake consideration of various aspects of groundwater regulation and management.

a. Rapid Assessment of the Legal and Regulatory Framework for Groundwater Management in Andhra Pradesh

During the May 2 AP WENEXA Project Steering Committee, the Chairman requested that WENEXA undertake a rapid assessment of the legal and regulatory framework for groundwater management in Andhra Pradesh. In response to this request, WENEXA provided technical assistance services of a legal expert to conduct a legal review of the AP Water Land and Trees Act and to conduct a stakeholder workshop to provide insights based on the review. The legal review was completed and the stakeholder workshop was conducted on July 14, 2005.

2.3 Task 3. Support Institutional Arrangements and Capacity Building for Sustainable Water Resources Management in Target Areas

To be initiated post DPRs.

2.4 Task 4. Provide Site Based Activities to Enhance Commercial Power Distribution and Sustainable Water Management in Agriculture

2.4.1 Pumpset Replacement Pilot

During July through September, the WENEXA Program carried out a pumpset replacement program. Fifteen farmers who were interested in having their non-branded pumpsets replaced with energy efficient pumpsets in exchange for their installation of at least one acre of drip irrigation systems were identified. WENEXA conducted a solicitation for quotations for the pumps and installed these prior to September 30, 2005. It is worthwhile to note, that it was relatively easy to identify farmers that were interested in participating in this program, and were keenly interested in shifting to drip irrigation. Farmers were also trained in pumpset efficiency and drip irrigation techniques prior to the installation of their new pumps. The dealer will collect data regarding power consumption and water discharge on a quarterly basis to enable the project to determine technical and social realities of installing energy efficient pumpsets in this setting.

Farmer participating in pumpset replacement pilot program shows new pump and area improved with drip irrigation

2.4.2 Technical Review Meetings:

The series of technical review meetings was continued in June, July and August. The purpose of these meetings was to facilitate technical discussion among WENEXA subcontractors, the Chief of Party, and the USAID CTO on development of the social surveys and the detailed project reports as they evolved. Meetings were also attended by BESCOM and NABARD. Meetings were held on July 20, August 17, and September 28.

2.4.3 WENEXA Presentation for the Zilla Panchayat and District Officers, September 22, 2005

An important contact was made with the CEO of the Zilla Panchayat of Bangalore Rural District during the month of September. Seemingly quite interested in the energy and water nexus issue in agriculture, the CEO invited WENEXA to present the project and its objectives to the monthly District managers meeting on September 22, 2005.

2.4.4 Draft Detailed Project Reports for Pumpset and Irrigation Efficiency

Draft detailed project reports were completed for pumpset efficiency and irrigation efficiency for the BESCOM Doddaballapur Substation Feeder Lines DF 12 and 13 by September 30, 2005. The reports indicated remarkably simple solutions to profound problems associated with energy and water use in groundwater irrigation agriculture in the region. The declining water table was well documented and showed a clear correlation between borewell development over 30 years and the declining tables. They showed that replacing 90% of the pumpsets with efficiency of less than 30% could reduce energy consumption by 45% with a payback period of less than two years. On the irrigation efficiency side it was evident that 50% more water is being used to cultivate crops in this area than is necessary, and that shifting most horticultural and sericultural crops from flood to drip irrigation could reduce water consumption by 45%. Shifting from flood to drip irrigation in mulberry and grapes (approximately 300 acres) could reduce water consumption by as much as 30%, with a payback period of less than one year.

2.4.5 September 29, 2005 Karnataka Stakeholder Briefing on DPR

Results and findings of the detailed project reports were presented to a group of Government Stakeholders, including BESCOM, NABARD, Horticulture Department, Sericulture Department, Zilla Panchayat, Executive Officer of the Taluk Panchayat, Mines and Geology and the Watershed Department. The response to the report was strongly positive and good comments were received and incorporated into the findings.

2.5 Task 5. Support Basin Level Hydrological Information Collection and Analysis in Target Areas

2.5.1 Interaction with Mines and Geology

In response to comments received from Mines and Geology during the Stakeholders' meeting the WENEXA team met with the Director of Mines and Geology to discuss

future collaboration. The team discussed the fact that the second phase of the project would be conducting a water balance analysis and would appreciate doing this in collaboration with the Department. The notion that a water balance approach, which can be easily used in other similar contexts, would be developed.

2.6 Task 6. Provide Site Based Support To Improve Urban Energy/Water Accessibility, delivery, efficient use, and waste management

During the period of June through September, the WENEXA Project continued to work with the Nagpur Municipal Corporation of Maharashtra State to develop an approach to water reuse that demonstrated the economic and social benefits of using recycled water. A water reuse options study was initiated that evaluated the potential end users of recycled water. The most viable user identified was the power station that intends to expand it MW capacity, but has not been able to do so because of its inability to secure a water right for the expansion. Although they expressed keen interest in using recycled water to meet their growing demand, they did not prefer to use water from the existing treatment plant due to its distance from the power plant and lack of a secure power source. They instead proposed to support development of the planned Nadipilli sewerage treatment plant that was closer to the power plant and could be supplied with a stable source of power.

2.7 Task 7. Support to Improve Water Service Delivery, Reliability and Pollution Reduction in the Industrial Sector

Concept document completed on site selection and approach for improving water reuse among industrial/commercial water users in the Greater Hyderabad Metropolitan Area

2.8 Task 8. Develop and Implement a Communication Strategy with the Engagement of Civil Society/Industrial groups to extend and promote water energy concepts and technologies

Activities to be initiated post DPR stage.

2.9 Task 9. Design of Participatory Models to Improve Local Ownership and Management of Rural Power Distribution

Activities to be initiated post DPR stage.

2.10 Task 10. Promote Sustainable Water Resources Management Through Grass Roots Institutions

2.10.1 Water and Energy User Survey, Feeder Lines DF 12 and 13.

The local NGO, Institute for Youth and Development, completed analysis of the water and energy user survey of consumers served by BESCOM's Doddaballapur Subdivision Feeder Lines DF 12 and 13. This database consisted of 856 entries, including the 509-pumpset owners identified by the subdivision office. Data from this survey provided the primary

basis for identifying farmers interested in participating in the pumpset pilot program, the grower communities to be targeted as result of findings from the irrigation efficiency detailed project report, and provided the basis for reporting on USAID's performance monitoring targets.

2.10.2 Exposure and Training

After completion of the user survey, the local NGO turned its focus to training and exposure visits for the critical pumpset farmers identified in the farm communities. The objective of the WENEXA program during this last month of the fiscal year was to introduce innovative farming methods to farmers identified as being receptive to change. The following training and exposure visits were conducted during this period:

- 45 farmers were taken on an exposure visits to progressive farms (September 2, 2005)
- The 15 pumpset farmers identified to participate in the pumpset replacement program were trained in drip irrigation methods and energy efficient pumpsets on September 14. This training laid the groundwork for involving the farmers in management of the energy and water resources.
- On September 27, 2005 IDE, a company that sells low cost environmentally friend agricultural instruments provided training program for 47 farmers.

Farmers participating in pumpset replacement pilot program attend training on drip irrigation and pumpset efficiency in Melekote, September 14, 2005.

Farmers Receive Training in IDE's Low Cost Drip Irrigation Methods September 27, 2005

4. PROGRAM PLANS FOR UPCOMING QUARTER

Agricultural Site Based Activity

- Initiate data reconciliation to link water and energy user survey, pumpset efficiency survey, and on farm survey databases.
- Initiate baseline data and project site map activities
- Initiate approach to watershed approach
- Initiate water balance analysis approach
- Outline intervention approach based on DPR findings
- Develop implementation approach for financing pumpset replacement and drip irrigation.

Municipal Site Based Activity

- Finalize selection of DPR Project option
- Initiate DPR
- Initiate pilot demonstration project

AP WENEXA Policy Activity

- Conduct two Technical Coordination Working Group Meetings
- Finalize Institutional Mapping for APWLTA
- Finalize Maheshwaram Retrospective Study

Industrial Site Based Activity

- Initiate local subcontract with CII/GBC
- Outline draft strategy

Other

- Support CII/GBC National Water Summit